What is claimed is:

1. A synthetic molecule that specifically interacts with a Toll-like receptor.

2. A molecule according to claim 1 that is a molecule selected from the group consisting of a peptide and a peptidomimetic molecule.

3. A molecule according to claim 3 wherein the molecule is a peptide that comprises an amino acid sequence of any one of Seq Id Nos. 1-73.

4. A molecule according to claim 1 wherein the peptide comprises an amino acid sequence that is at least about 70% identical to any one of Seq Id Nos. 1-73.

5. An expression vector that comprises a nucleic acid molecule encoding a synthetic peptide that specifically interacts with a Toll-like receptor.

6. A composition comprising an effective amount of molecule according to claim 1 or an expression vector according to claim 5 and a physiologically acceptable carrier.

7. A method of treating a disease selected from the group consisting of cancer or an immune-mediated pathogenic infection, comprising administering to a subject in need thereof an effective amount of a composition according to claim 6.

8. A method according to claim 7 wherein the disease is a cancer selected from the group consisting of melanoma, leukemia, lymphoma, a solid tumor (lung, liver, kidney, brain, bladder), retinoblastoma, sarcoma, and a connective tissue cancer.

9. A method according to claim 8 wherein the cancer is selected from the group consisting of a lung cancer, a liver cancer, a kidney cancer, a brain cancer, and a bladder cancer.

10. A method according to claim 7 wherein the disease is an immune mediated pathogenic infection selected from the group consisting of tuberculosis, leprosis, a bacterial infection caused by a of Gram positive microorganism, a bacterial infection caused by a of Gram negative microorganism, HIV

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infection, Epstein Barr Virus infection, Cytomegalovirus infection, an infection caused by a protozoa, and Leishmania.

11.   A method of modulating an immune response in a subject, comprising administering to the subject an effective amount of a composition according to claim 6.

12.   A method according to claim 11 wherein the composition comprises an expression vector that comprises a nucleic acid molecule encoding a synthetic peptide that specifically interacts with a Toll-like receptor.

13.   A method according to claim 11 wherein the molecule that specifically interacts with a Toll-like receptor is selected from the group consisting of a peptide and a peptidomimetic molecule.

14.   A method according to claim 11 wherein the molecule that specifically interacts with a Toll-like receptor is a peptide that comprises an amino acid sequence selected from the group consisting of Seq Id Nos. 1-73.

15.   A method according to claim 11 wherein the molecule that specifically interacts with a Toll-like receptor is a peptide that comprises an amino acid sequence that is at least about 70% identical to any one of Seq Id Nos. 1-73.

16.   A method according to claim 11 wherein the modulation comprises up-regulation of a pro-inflammatory or TH1 response.

17.   A method according to claim 11 wherein the modulation comprises down-regulation a regulatory or TH2 response.

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